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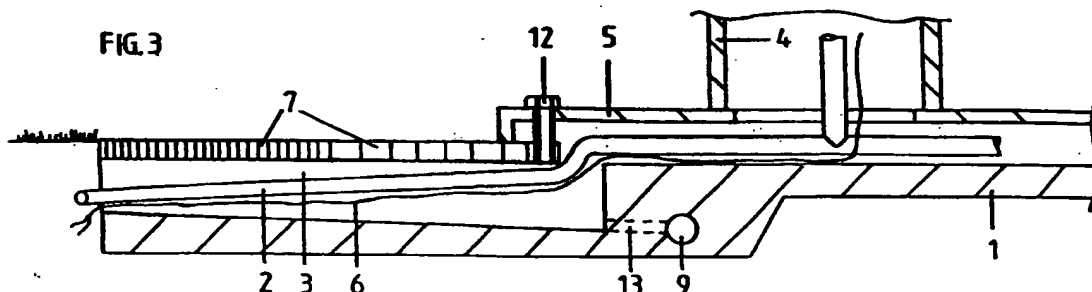
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NL-8251 AW Dronten(NL)**(74) Representative: **Morel, Christiaan F., Ir.Dr.  
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NL-7301 GL Apeldoorn (NL)**(54) **Leakproof filling station floor.**

(57) Method for constructing a filling station, comprising a number of storage tanks, one or more pump islands (5) with a number of pumps (4) on each pump island (5), and also lines, such as the lines (2,6,9) for the supply of the necessary oil and petrol from the storage tanks to the pumps (4), and for the discharge of rainwater and/or spilt product, and a floor surrounding the pump island. First of all a ground slab (1) is made in one piece by monolithic

construction, at the same time a number of facilities being provided in the slab (1), such as fixing means at the position of the so-called islands (5) where the pumps (4) are placed. In the ground slab near the top side a recess (3) or trench and in the trench (3) lines (2,6) are then placed, and the structures such as pump islands (5), pumps (4) and possibly a canopy are fixed to said slab (1).

**FIG.3****EP 0 580 235 A1**

The invention relates to a method for constructing a filling station, comprising a number of storage tanks, on or more pump islands with a number of pumps on each pump island, and also lines, such as the lines for electricity, for the supply of the necessary oil and petrol from the storage tanks to the pumps, and for the discharge of rainwater and/or spilt product, and a floor surrounding the pump island up to a desired distance from a pump island, and a ground slab for a filling station.

Usually in the construction of filling stations, at the place where the pumps are situated, the so-called pump island, the ground has to be paved or tiled up to at least five metres from the island on which the fuel pumps are situated, and the joints between paving stones or tiles then have to be made leakproof with filling compound, so that polluting liquids such as petrol and oil cannot reach the ground below the paving through these joints.

The construction of a filling station has been carried out until now by first installing the storage tanks in the ground, then constructing the pump island, for which purpose a concrete foundation, containing a number of vertical passages for the throughfeed of the lines, is poured. These vertical passages or holes must be filled up after the various lines are installed, otherwise the ground under the foundation runs a great risk of becoming polluted. Before the surrounding paving is laid, the various lines are laid in the ground, following which the paving is carried out, and the joints in the paving are made leakproof.

There are many disadvantages in such a paving. For example, the lines running to the pump island must be taken vertically upwards through the foundation at the pump island.

This gives rise to a hole there which must be sealed. These vertical breaks in the foundation are in the island, and it is precisely there that the spillage of liquids will occur most, due to leakage in the pumps, which is normally not visible. Another disadvantage is that ground settlement will cause the paving to subside, partly as the result of the cars and lorries passing over it. The subsidence depressions will generally not be uniform. Where there are larger quantities of rainwater to be discharged, puddles will consequently occur in the depressions. It is also possible for rainwater to be discharged together with pollutants in an undesirable way towards an edge of the paving, over which it washes, so that the ground at that point is polluted. If there is further ground subsidence, the leak-free filling of the paving will crack, with the result that liquids still have the chance to reach the ground below through the floor, and to pollute it there. In order to prevent this as far as possible, the paving will most certainly have to be renewed very two to three years if the ground below is soft.

Besides, the lines run under the paving. The great disadvantage of this is that if the ground settles unevenly, shear stress can occur on the horizontally running lines. Too high shear stresses can damage these lines, with the result that slight leakages can occur unnoticed, and can greatly pollute the ground below the paving. It is also often very difficult to make a floor leakproof afterwards, for example if a part has to be broken up because one or more lines have to be replaced.

The object of the invention is to overcome these drawbacks. This object is achieved by a method according to the invention through the fact that first of all a ground slab is made in one piece by monolithic construction, preferably from reinforced concrete, at the same time a number of facilities being provided in the slab, such as fixing means at the position of the so-called islands where the pumps are placed, and in the ground slab near the top side a recess or trench which in the horizontal direction of each island runs towards the edge of the slab, and in that after the ground slab has been produced, lines are then provided on said slab in the trench, for example for petrol, oil, air, electricity etc., and the structures such as pump islands, pumps and possibly a canopy are fixed to said slab.

This method has the great advantage that the floor surrounding the pump islands is not broken anywhere by leakage points in the vertical direction to the ground below. Nor can leakage points occur due to uneven ground subsidence. Due to the fact that the lines are integrated near the top side in the floor in an easily accessible way, it is always possible to check the lines for leakage and to replace or repair them if necessary, without having to break up the expensive liquid-tight paving.

Finally, the invention makes modular construction of elements such as canopies and petrol pumps possible. These elements can then easily be replaced if there is a change in company logo. A separate foundation for these elements is not necessary, so that these costs are saved.

The invention will be explained in greater detail with reference to the drawing, in which:

- Fig. 1 shows a possible embodiment of a floor of a filling station, in perspective;
- Fig. 2 shows a top view of the filling station shown in figure 1;
- Fig. 3 shows a cross-section of a detail of the floor shown in figure 1.

Figure 1 shows a perspective general view of a possible embodiment of a ground slab 1, produced by the method proposed according to the invention. The ground slab 1 consists of one undivided and unbroken part. Lines 2 come up from underground storage tanks (not shown) for the various fuels, outside the range of the ground slab 1, which

lines then deflect horizontally and are conveyed through recesses 3 in the face of the ground slab 1 to the fuel pumps 4 on the pump islands 5. Other supply lines 6, such as those for oil, air, water and electricity, are also disposed in these recesses 3. The recesses 3 are covered by heavy covering means 7 which can be driven over, and which are designed in such a way that heavy traffic can drive over them without these covering means giving way. Gulleys 8 are provided for the discharge of rainwater and spilt products. From these gulleys water is discharged through pipes 9 integrated in the ground slab to, for example, a mud trap/oil separator (not shown). These pipes 9 slope downwards slightly in the direction of the edge.

Figure 2 shows the same ground slab, in top view here. The rainwater discharge pipes are fed by gulleys 8 placed in series. Supply lines 2 and 6 are shown as dashed lines. The service building 10 and the surrounding pavement 11 are also shown diagrammatically.

Figure 3 shows a section along the line I - I in Figure 2. It shows fixing means 12 which are poured, for example as inserts, together with the ground slab material, and by means of which the structure, here the pump island, can be installed in a modular way. The bottom of the recesses 3 runs at a slight angle to the horizontal bottom slab 1. These recesses are connected by means of discharge pipes 13 to the rain discharge pipes 9, so that liquids which have accumulated in the recesses 3 are also discharged to the mud trap/oil separator (not shown).

#### Claims

1. Method for constructing a filling station, comprising a number of storage tanks, one or more pump islands with a number of pumps on each pump island, and also lines, such as the lines for electricity, for the supply of the necessary oil and petrol from the storage tanks to the pumps, and for the discharge of rainwater and/or spilt product, and a floor surrounding the pump island up to a desired distance from a pump island, **characterised in that** first of all a ground slab is made in one piece by monolithic construction, preferably of reinforced concrete, at the same time a number of facilities being provided in the slab, such as fixing means at the position of the so-called islands where the pumps are placed, and in the ground slab near the top side a recess or trench which in the horizontal direction of each island runs towards the edge of the slab, and in that after the ground slab has been produced, lines are then placed on said slab in the trench, for example for petrol, oil, air, electricity

tricity etc., and the structures such as pump islands, pumps and possibly a canopy are fixed to said slab.

2. Method according to Claim 1, **characterised in that** after the formation of the ground slab the structures such as canopies, fuel pumps or service units, which are manufactured elsewhere as a construction kit, are fitted in a detachable manner by means of fixing means disposed integrally in said slab.
3. Ground slab for a filling station produced according to one of the methods of Claim 1 or 2, **characterised in that** the slab slopes slightly conically towards at least one large or small gully, and in that a discharge pipe from the gully to the edge in the concrete is already provided in the concrete slab during the manufacture of the slab.
4. Ground slab according to Claim 3, **characterised in that** the bottom of the trench for the lines slopes gently from the edge of the slab to the island.
5. Ground slab according to Claim 4, **characterised in that** a reinforcing rib is disposed near the edge of the slab.

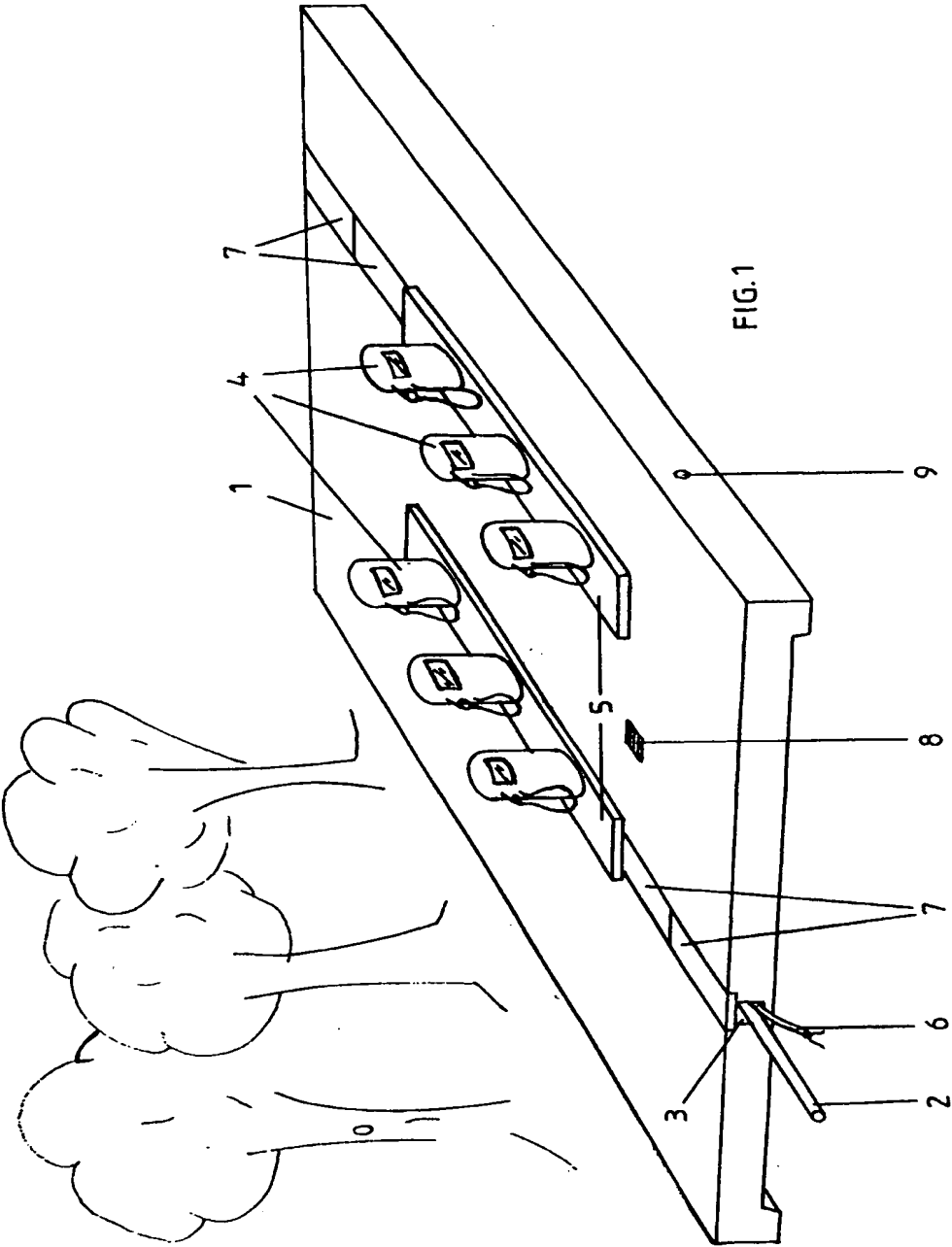


FIG. 2

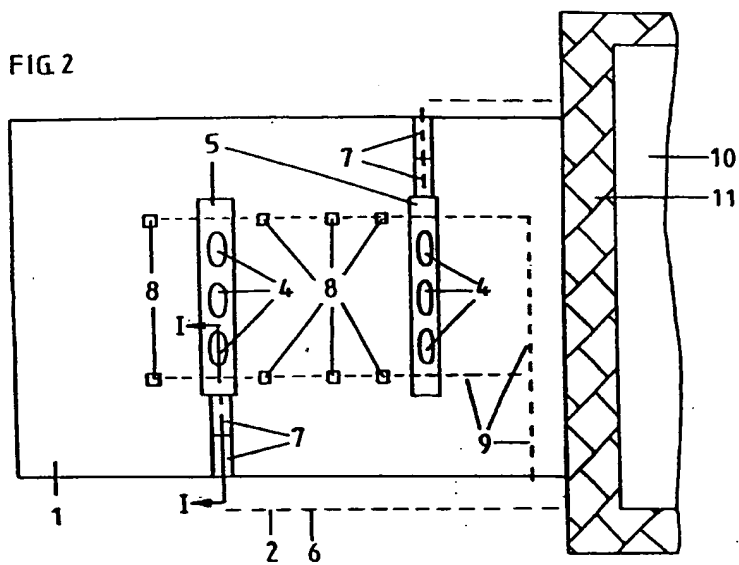
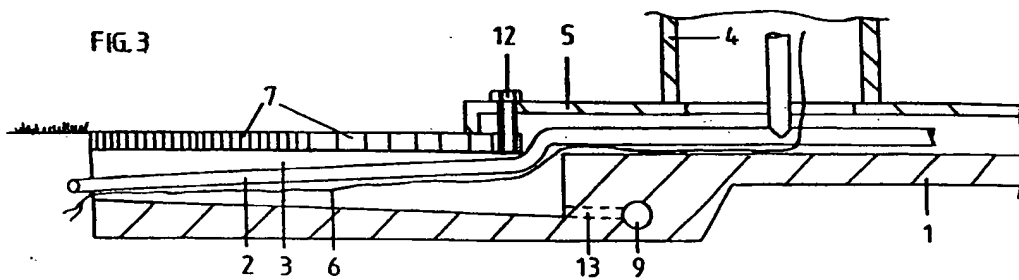


FIG. 3





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## EUROPEAN SEARCH REPORT

Application Number

EP 93 20 2101

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	DE-U-9 108 276 (STRÄTNER) * figures *	3	E04H1/12 B60S5/02 E01C9/00 B65D90/24
A	---	5	
A	DE-A-3 941 367 (WENDORFF) * column 2, line 9 - line 24 *	3	
A	---		
A	DE-A-4 015 349 (BECKER) ---		
A	FR-A-2 497 746 (ROUSSEAU) ---		
A	DE-A-2 939 007 (HEIDENREICH) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E04H B60S E01C B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 05 OCTOBER 1993	Examiner HUBEAU M.G.
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons * : member of the same patent family, corresponding document			